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Part No. 8 716 108 901 Issue A

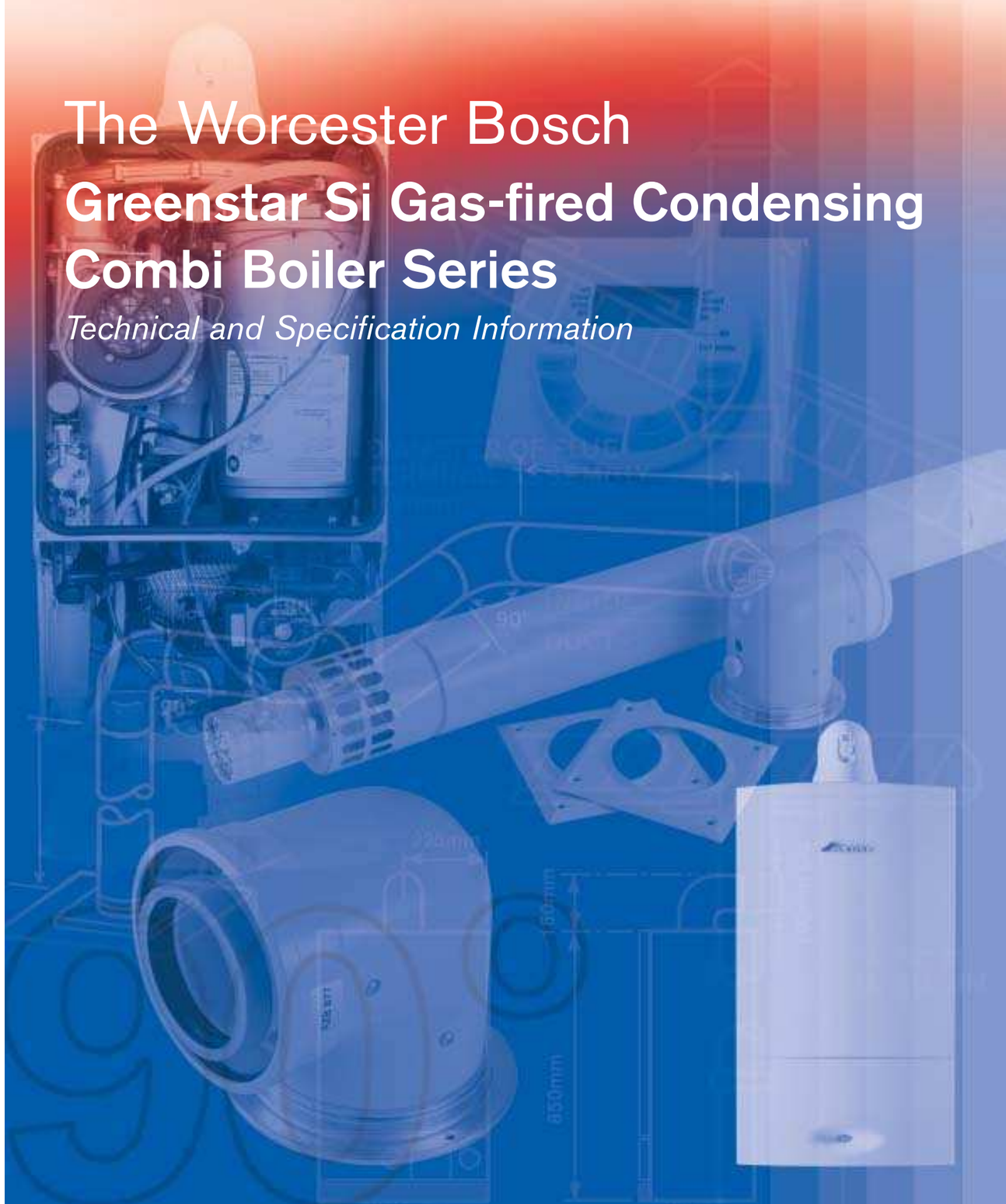
WH1387

SEDBUK Band A
Gas Boilers

WORCESTER
Bosch Group
Heating and Hot Water Comfort

The Worcester Bosch
Greenstar Si Gas-fired Condensing Combi Boiler Series

Technical and Specification Information



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The Greenstar Si condensing combi boiler series
Total heating and hot water comfort

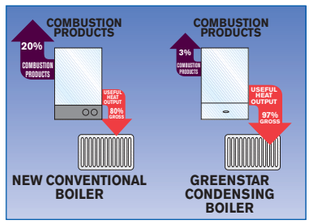
The Greenstar Si combi series

Features	Benefits
Adjustable hot water control.	User comfort and economy.
Aluminium silicon heat exchanger.	High efficiency.
Boiler keep hot facility.	Instantly heated hot water.
SEDBUK Band A.	High efficiency.
Less than 28kg lift weight.	One man lift.
Wall mounting jig.	Allows pre-fabrication of system.
Compact dimensions.	Space saving, ease of siting.
Modulation control.	Energy saving.
Optional filling link.	Labour saving.
Optional mechanical and digital timeclocks.	Eliminates the need for external wiring.
Radio frequency controlled room thermostat.	Eliminates wiring, helps comply with part L of Building Regulations.
Anti-cycle control.	Energy saving.
Electronic ignition.	Energy saving.
Built-in frost protection.	Money saving, economical protection.
Multi-directional fluing.	Siting flexibility.
No ventilation grilles required for compartment installations.	Money and labour saving.
Fault finding diagnostics.	Time saving.
Operational status indicator.	Consumer friendly.
Built-in boiler bypass.	Labour and money saving.
Pump seizure protection.	Prevents callbacks.

It's often said that you can't please everybody all of the time – but the advanced new series of Greenstar Si condensing combi boilers from Worcester Bosch has so much to offer that it's already disproving such a notion.

Here is a groundbreaking range of energy-saving boilers which is very good news for the environment and excellent news for specifiers, developers, installers and consumers alike.

Higher efficiency and highly cost effective

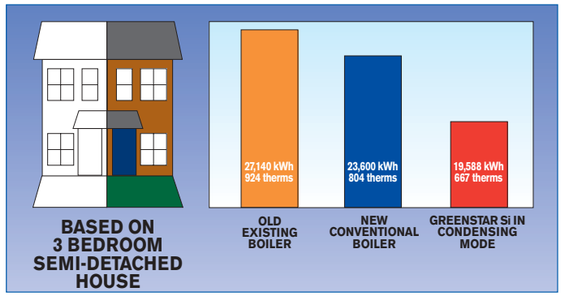


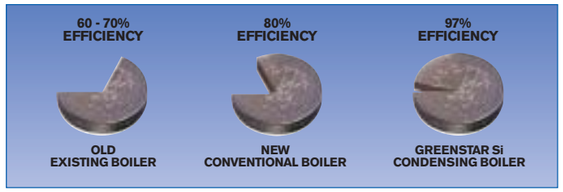
Up to an incredible 97% of the gas consumed by a new Greenstar Si condensing combi boiler is converted into heat for the heating and/or hot water system. Other types of boiler achieve around 80% efficiency. Therefore, compared with a new conventional combi boiler, a Greenstar Si can cut heating and hot water bills by between15-20% – and it's up to 30% cheaper to run than an older boiler.

Hence SEDBUK Band A ratings for all models in the new Greenstar Si condensing combi range.

Greenstar Si condensing combi boilers deliver this energy-saving performance by ingeniously recycling exhaust gases to extract and re-use the latent heat – a highly efficient use of energy which also significantly reduces carbon dioxide emissions into the atmosphere.

To all these major benefits you can add yet more: superlative Worcester Bosch quality and reliability; a range of outputs to satisfy the heating demands of a range of households; and truly exceptional all-round value for money.


BASED ON 3 BEDROOM SEMI-DETACHED HOUSE
27,140 kWh 924 therms
23,600 kWh 804 therms
19,588 kWh 667 therms
OLD EXISTING BOILER
NEW CONVENTIONAL BOILER
GREENSTAR Si IN CONDENSING MODE



The Greenstar Si series at a glance

		25Si	30Si
Output kW	Min	7.2kW	7.2kW
	Max	25.0kW	30.0kW
Flow rate at 35°		10.2 lt/min	12.3 lt/min
CH temperature control		✓	✓
DHW temperature control		✓	✓
Modulating control		✓	✓
Natural gas		✓	✓
LPG		✓	✓
Electronic ignition		✓	✓

The Greenstar Si condensing combi boiler series ● The advantages of a combi system
The Greenstar Si condensing combi system layout ● Installing the Greenstar Si Series
Greenstar Si series horizontal fluing options ● Greenstar Si series vertical fluing options
Installation requirements
The Greenstar Si series accessories ● After-sales
Worcester Bosch training

The Greenstar Si condensing combi boiler series

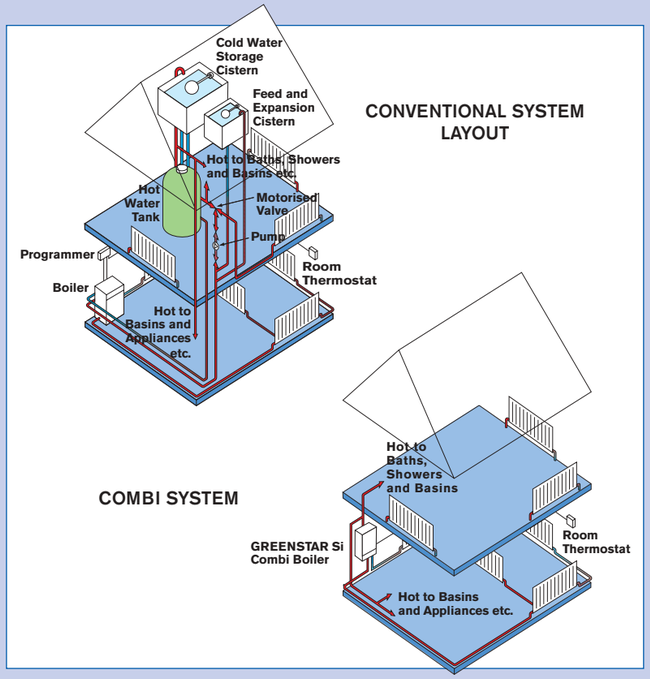
The advantages of a combi boiler

A combi (or combination boiler) is a compact and highly efficient unit giving all the heating and hot water you need, with significant savings on running and installation costs.

Unlike a conventional heating and hot water system, a combi boiler system does not store domestic hot water. It heats water directly from the cold mains – as you use it. There's no hot water cylinder, no tank in the loft (and so less risk of freezing and flooding),

and none of the connecting pipework. So you not only save space, but also reduce hot water costs – which can account for up to 60% of a typical domestic fuel bill.

A combi also supplies hot water at mains pressure, giving you exhilarating power showering without the need for a pump. And as, on average, a shower uses considerably less water than a typical bath, the savings on hot water costs and water consumption can be significant.



A condensing boiler is more efficient due to its ability to extract more heat from the flue gases normally lost to the environment through the flue system.

All the Greenstar Si models use the same Aluminium-Silicon heat cell with an extra large surface area.

As the flue gases pass through the heat exchanger this extra surface area cools the flue gases to around 55°C whereupon the latent heat within, which would normally be lost to the atmosphere, is instead released and applied to the system.

It is this ability to extract as much heat as possible from the gas it burns that gives the Greenstar Si series an exceptionally high level of operating efficiency.

This higher efficiency is recognised within section L of the Building Regulations, subsequently achieving a higher SAP or NHER rating.

Key features of the Greenstar Si condensing boilers include the separate plate domestic hot water heat exchanger, which is guaranteed for 5 years.*

This, combined with the 'keep hot' facility, ensures that hot water is delivered instantly to the tap.

*Subject to conditions

The Si series design benefits in operation

Hot water mode

Whenever a hot water tap is turned on the incoming mains water will activate a flow switch which, via the electronic control system, ignites the pre-mix burner. Boiler output is automatically boosted to maximum to heat the incoming cold water as it passes through the heat exchanger. Electronic controls modulate the boiler output downwards to ensure the hot water temperature remains between 40 and 60°C (as set by the consumer).

Keep hot facility

All the Greenstar Si models have an in-built keep hot facility which will keep the primary water within the heat cell hot. This will ensure that hot water is delivered instantly to the opened outlet.

Eco mode

With the Eco mode button activated the keep hot facility is de-energised and the hot water will be heated from cold. A slight delay should be expected before the hot water is at full temperature when in the Eco mode.

Central heating mode

On a Central Heating demand, the boiler will initially fire at minimum output before modulating upwards to meet the actual system requirement. Electronics within the boiler continually monitor the heating flow temperature increasing or decreasing output on demand. A built-in bypass and anti-cycling device makes the Greenstar Si range particularly suitable for use on systems with TRV's (Thermostatic Radiator Valves).

Options

Fluing

The Greenstar Si series features 2 different sizes of multi-directional RSF flue systems, 100mm or 125mm.

The flue can be run horizontally or vertically with additional 90 or 45 degree in-line bends allowing changes of route or direction, providing an extremely flexible and versatile fluing system enabling the appliance to be sited virtually anywhere.

More details are shown on page 13.

Versatility

Gas

The Greenstar Si series is manufactured in both natural gas and LPG variants.

Controls

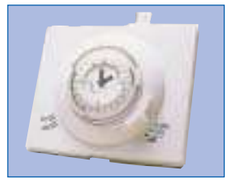
The Si Series feature:

- Power on/off switch.
- Central heating variable temperature control selector.
- An integral facia with status display lights which also operate as a fault diagnosis display.

Optional plug-in controls

The Greenstar Si series of condensing combi boilers is available with a comprehensive range of easy-to-use controls, ranging from a simple mechanical timer to a choice of sophisticated radio-frequency digistats. All fascia mounted controls offer simple plug-in connection to the boiler circuit board.

MT10 mechanical timer



A simple easy-to-operate mechanical timer with 15 minute switching points over a 24 hour period. The timer features a clock face with raised hands to facilitate setting by visually impaired users.

MT10RF mechanical RF thermostat

A simple, easy-to-operate 24 hour mechanical timer combined with a radio frequency room thermostat. The thermostat features individual higher and lower temperature sensors.

DT20RF digital RF thermostat with twin channel programmer

A wall-mounted RF room thermostat with digital display, combined with a twin channel digital timer in the boiler fascia. The fascia mounted programmer benefits from automatic time and date setup, automatic summer/wintertime changeover and a backlight for use in low light conditions.

DT20 twin channel digital programmer

A versatile, easy-to-learn, 7 day, digital programmer offering up to 3 on/off settings per day. The programmer has a host of innovative features including automatic setup, which sets the correct time and date at power-up, automatic summer/wintertime changeover and a green backlight for use in low light conditions.

DT10RF digistat

A familiar wall-mounted 24 hour programmable RF digital thermostat combined with a fascia mounted single channel programmer to time the hot water cylinder or combi preheat functions. The programmer includes a built-in receiver for the room thermostat and all of the functionality of the DT20.

DT10RF optimiser

A seven day digital programmable RF thermostat with a seven day programmer/receiver in the boiler fascia. The transmitter is the tried and tested Optimiser as available with other Worcester boilers. The optimum start feature, where the thermostat delays the firing of the boiler until necessary, is a useful energy-saving option.

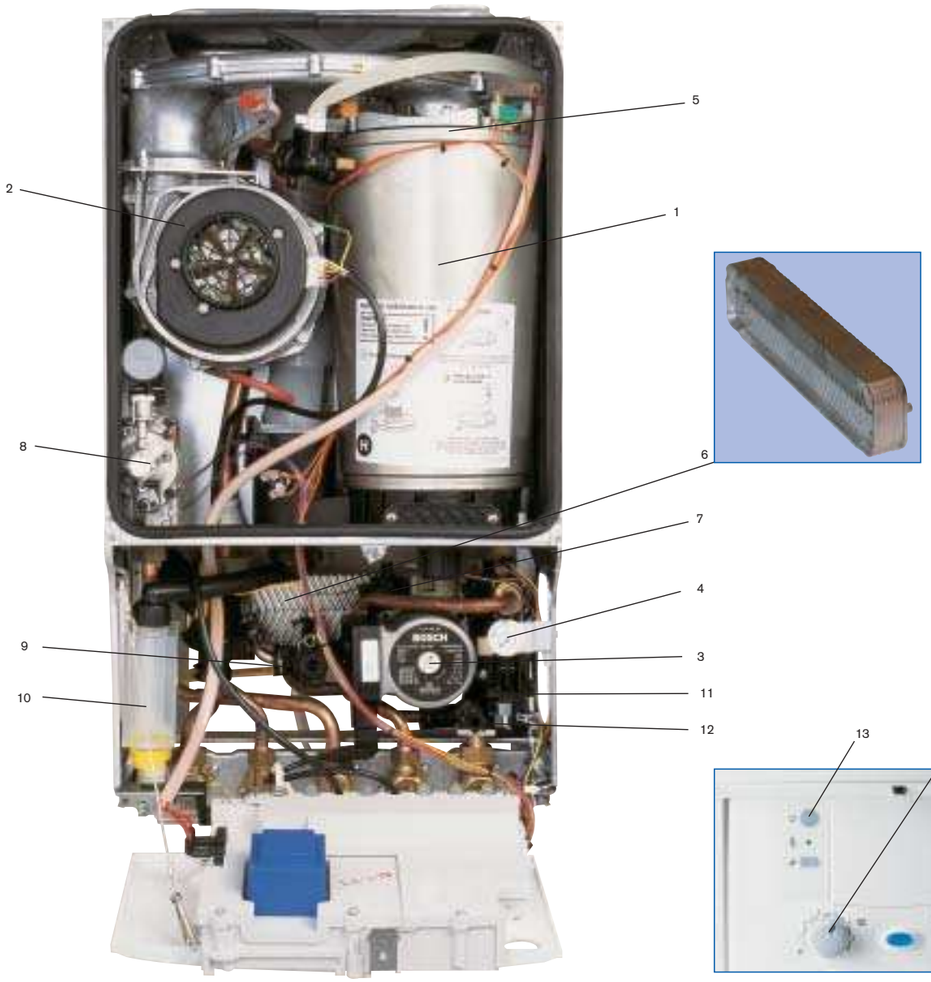
Increased SAP Ratings

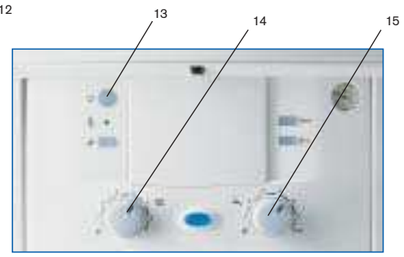
As well as the Si models achieving very high SAP ratings for dwellings, the addition of the optimising temperature controller further increases these ratings as well as being part of the recommended best practice, as covered by the CHESS design standard.

Technical data – Si series

Classification	*Greenstar 25Si* *(25kW) Combi Boiler*	*Greenstar 30Si* *(30kW) Combi Boiler*
Height	710mm (max)	710mm (max)
Width	400mm	400mm
Depth	330mm (max)	330mm (max)
Weight (Lift)	27.1kg	27.1kg
Heating Flow/Return Connections	22mm compression	22mm compression
Hot/Cold Water Connections	15mm compression	15mm compression
Pressure Relief Valve	22mm Ø	22mm Ø
Condensate Connection	22mm Plastic Pipe	22mm Plastic Pipe
Gas Connection	2mm compression	22mm compression
Primary Water Content	3 litres	3 litres
Minimum Domestic Inlet Pressure For Maximum DHW Flow Rate	1.3bar	2bar
Minimum Domestic Inlet Pressure To Operate The Appliance	0.2bar	0.2bar
Maximum Domestic Inlet Pressure	3.0bar	3.0bar
DHW Flow Rate @ 35°CΔT	10.2l/min	12.3l/min
Output To Central Heating	7.2-24kW (24,560-82,000 Btu's/hr)	7.2-24kW (24,560-82,000 Btu's/hr)
Wall Mounting Jig	Yes	Yes
Filling Loop	Optional	Optional
Plug-In Timers	Yes (Optional)	Yes (Optional)
Optimising Room Temperature Controller	Yes (Optional)	Yes (Optional)
Condensing In DHW Mode	No	No
Maximum Vertical Flue (100mmØ)	6,400mm (inc terminal)	6,400mm (inc terminal)
Maximum Horizontal Flue (100mmØ)	4,600mm	4,600mm
Maximum Horizontal Flue (125mmØ)	13,000mm	13,000mm
Maximum Vertical Flue (125mmØ)	15,000mm (inc terminal)	15,000mm (inc terminal)
SEDBUK Value/Band	Band A – 90.1%	Band A – 90.1%
NOX Classification	Class 5	Class 5

The Greenstar Si condensing combi boiler – inside story





Key to components

1. Aluminium/Silicon Heat Exchanger
2. Pre-mix Fan
3. Circulating Pump
4. Pressure Gauge
5. Down Firing Low Nox Burner
6. Plate DHW Heat Exchanger
7. Automatic Air Vent
8. Gas Valve
9. Expansion Vessel Connection
10. Syphon
11. Diverter Valve
12. Drain Point
13. On/Off Button
14. Central Heating Temperature Control
15. Domestic Hot Water Temperature Control

Installing the Greenstar Si series

All combi boilers require less installation time than a conventional boiler, for these reasons:

1. All the major components, including the pump, are contained within the boiler casing and do not need to be fitted separately.
2. The boiler comes pre-wired and pre-plumbed.
3. There is no need to install a hot water cylinder.
4. There is no need to install a storage tank in the roof space.
5. There is less pipework.

However, the Si Junior series is exceptional for its number of additional time-saving installation features:

- One man lift
- Automatic gas pressure adjustment
- Unique and highly versatile multi-directional fluing system
- Combined ignition and control board means less connections
- Optional plug in filling loop
- Optional plug in timers

Siting of appliance

General

The appliances are not suitable for external installation.

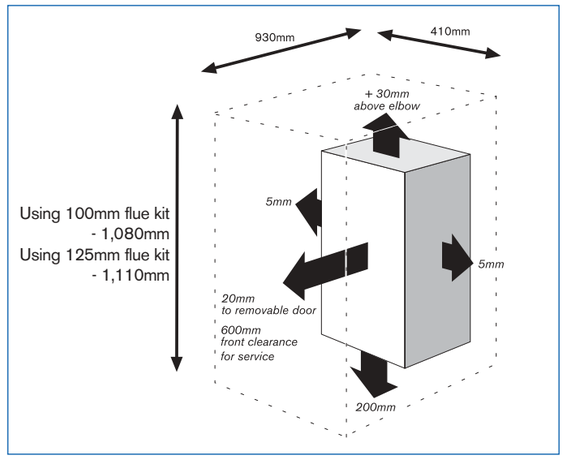
The wall on which the boiler is to be mounted should be capable of supporting an overall weight of approximately 40 kg.

The wall does not require special protection, however, if the appliance is to be fitted in a timber frame building the guidelines laid down in BS 5440:Part 1:2000 and the gas installer manual Chapter 11, “Gas in Timber Frame Housing” should be adhered to.

The appliances may be installed into an airing cupboard if required. See page 11 for details.

Clearances

The following clearances should be allowed for installation and servicing.



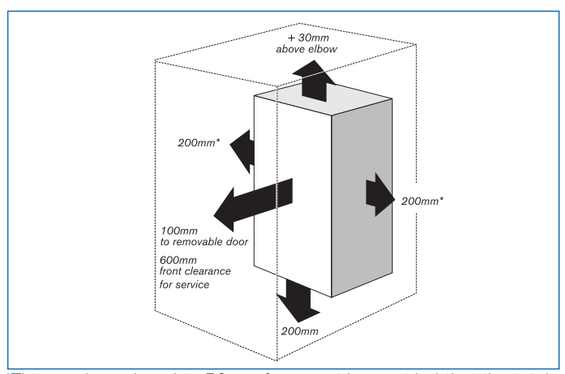
Compartment installation

The appliance may be installed in any room, although particular attention is drawn to the requirements of the IEE regulations applicable and in Scotland the electrical provisions with respect to installation in a room containing a bath or shower.

1. The room in which the appliance is installed does not require a purpose provided air vent.
2. If the appliance is installed in a cupboard or compartment with dimensions that allow the following minimum clearances, then no ventilation is required:

Position of Appliance	*Greenstar Si Minimum Unventilated Clearance (to Removable Door)*
In front	100mm
Below	200mm
Right Side	200mm*
Left Side	200mm*
Above Flue Elbow (when using Condensfit II flue)	30mm

Ventilation free compartment installation – minimum clearances

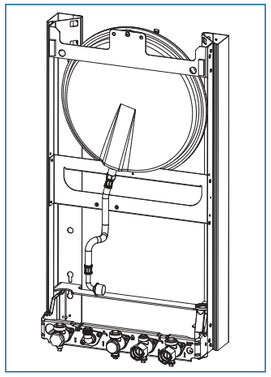


*This can be reduced to 50mm for one side, provided that the total side clearances add up to 400mm or more.

Wall preparation

The picture shows the Si wall mounting jig which enables a simple and straightforward method of attaching the boiler to the wall surface.

After fixing the jig to the wall, the appliance, having a lift weight of less than 28kg, can be easily lifted by one man onto the jig and the union connections tightened. The pipework can be routed behind the boiler without the need for an additional wall spacing frame.



Condensate disposal

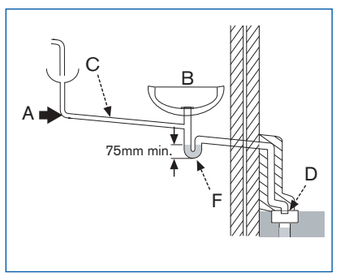
All condensing boilers generate condensate discharge which needs to be piped away from the appliance in via a plastic pipe.

The amount of condensate generated depends on the efficiency and operating status of the appliance. The boilers will generally only produce condensate whilst operating in central heating mode. Some models will condense in both heating and hot water modes and can generate up to 2 litres of condensate water an hour.

Condensate termination and route

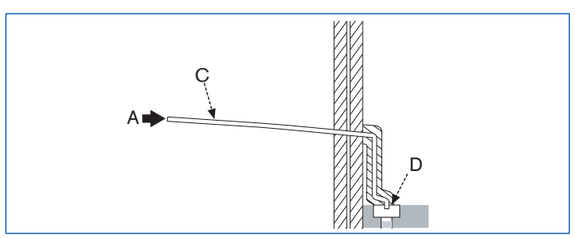
The condensate connection on the Worcester Bosch appliances is in 22mm plastic. The pipe should be extended and run away from the appliance with a constant fall of 2.5 degrees or 50mm in every metre.

The condensate pipe can terminate into any one of five areas:

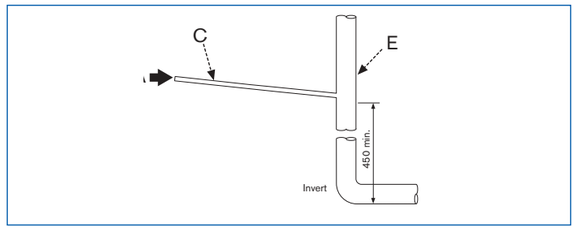


A - Condensate from boiler
B - Sink
C - 22mmØ plastic condensate pipe
D - Gulley
E - Internal soil and vent stack
F - Waste trap (75mm min)
G - 300mm x 100mmØ sealed plastic tube
H - Ground level
J - Drainage holes 50mm from base of tube (12mmØ at 25mm centres) facing away from building
K - Limestone chippings

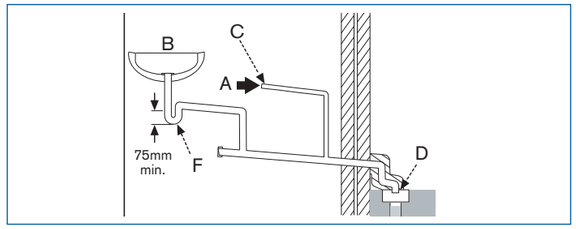
Internal sink/washing machine drain



External drainage system

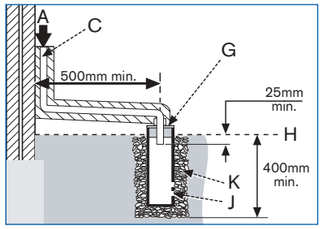


Soil/vent stack



Internal waste drainage system

Whilst all of the above methods are acceptable it is always the best practice to terminate the condense pipe via an internal waste system. This will eliminate the need for any external condensate pipe runs which can be susceptible to freezing in extreme weather.



External condensate absorption point

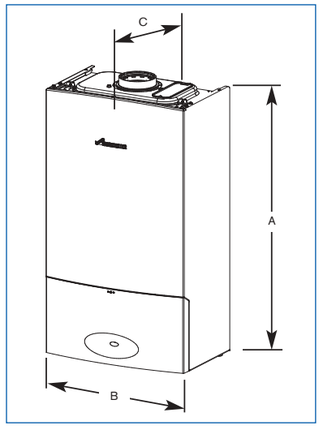
External condensate pipework

All Worcester Bosch condensing boilers have within a syphonic condensate trap. Rather than the condensate constantly dripping into the discharge pipe, the condensate is collected into a trap which releases it in 100ml quantities. This will help prevent freezing occurring.

If there is no alternative and the condensate pipe has to be externally run, the following should be considered:

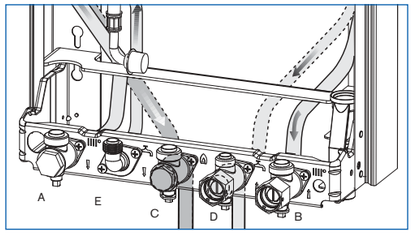
- The pipe run should take the shortest practical route.
- The pipework should be insulated with weather resistant insulation.
- The pipe should terminate as close as possible to the ground or drain, whilst still allowing the condensate to safely disperse. This would prevent wind blowing up the pipe.
- The pipework should be installed with the minimum of horizontal runs and with a downward slope of at least 2.5 degrees.

Pipework connections and casing dimensions



Cabinet dimensions	
A	700mm*
B	400mm
C	330mm

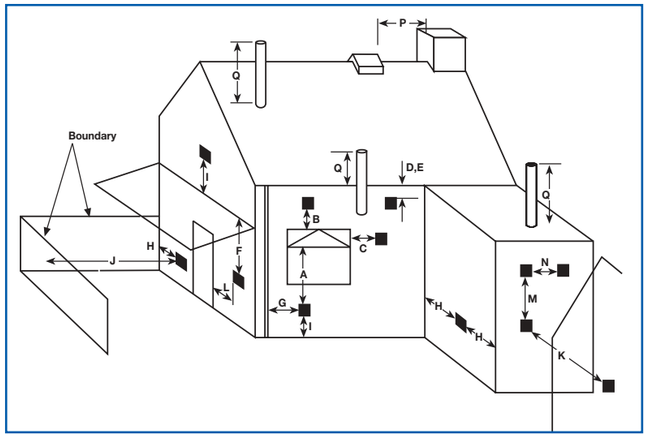
*710mm to top of casing front.



Pipework connections		
A	CH Flow	22mm
B	CH Return	22mm
C	Gas Inlet	22mm
D	Mains Water Inlet	15mm
E	DHW Outlet	15mm

Flue terminal positioning

RSF horizontal and vertical



The flue system must be installed and terminated in accordance with the recommendations of BS 5440:Part 1.

Key to illustration

	Terminal Position	*Min Distance*
A[1]	Directly below an opening, air brick, opening windows etc.	300mm
B[1]	Above an opening, air brick, opening window etc.	300mm
C[1]	Horizontally to an opening, air brick, opening window etc.	300mm
D	Below gutters, soil pipes or drain pipes	75mm
E	Below eaves	200mm
F	Below balconies or car port roof (lowest point)	200mm
G	From a vertical drain pipe or soil pipe	150mm
H	From an internal or external corner	300mm
I	Above ground, roof or balcony	300mm
J	From a surface facing the terminal	600mm
K	From a surface facing the terminal	1200mm
L	From an opening in the car port (e.g. door, window) into the dwelling	not recommended
M	Vertically from a terminal on the same wall	1,500mm
N	Horizontally from a terminal on the same wall	300mm
P	From a vertical structure on the roof	*
Q	Above intersection with roof	*

[1] In addition, the terminal should not be nearer than 150 mm (fanned draught) to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame.

* See instructions supplied with vertical flue kits

General position

1. The terminal must not cause an obstruction nor the discharge a nuisance. Particular care should be exercised with regards to the pluming of the flue gases and any increase in noise levels.
2. If a terminal is fitted less than 2 metres above a surface to which people have access, then a guard must be fitted. A terminal protective guard is available from Tower Flue Components, Vale Rise, Tonbridge. Tel No. (01732) 351555. The terminal guard must be securely fixed to the wall using suitable plugs and corrosion resistance screws. The guard must be symmetrically positioned about the terminal assembly and spaced such that there is a gap of 50mm between the end of the terminal and the guard.
3. In certain weather conditions, a white plume of condensation will be emitted from the flue terminal and siting where this could be a nuisance, i.e. near security lighting, should be avoided.
4. The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5440:1.

Boiler location & clearances

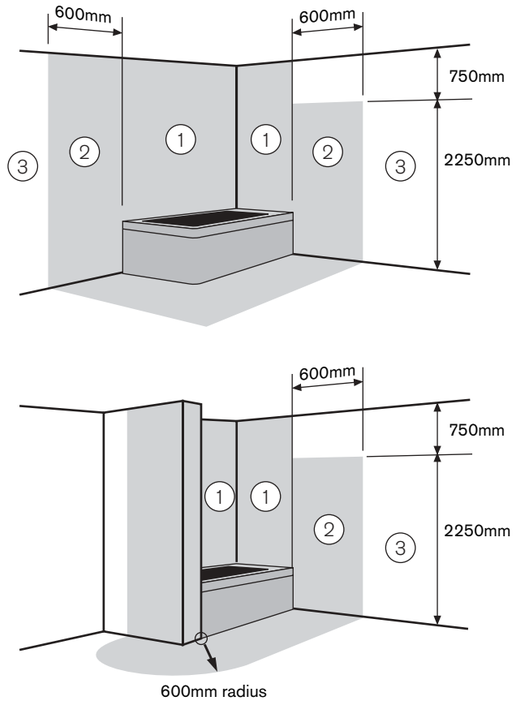
Bathrooms

The boiler can be installed in zones 2 or 3. If a mechanical or RF mechanical timer is fitted to an Si combi, then it can only be installed in zone 3.

See IEE wiring regulations.

IMPORTANT: any switch or appliance control using mains electricity must not be able to be touched by a person using the bath or shower.

Electrical switches, fused spur and socket outlets must not be situated in the bathroom.



Greenstar Si combi boiler series horizontal fluing options

The Greenstar Si series has the choice of 2 differently sized horizontal RSF flue systems, 100mm and 125mm. Both systems have different maximum lengths. Options 1 to 6 detail the permissible lengths.

Condensfit II

Horizontal RSF Flue

Flue Diameter	100mm	125mm
Minimum Flue Length	342mm	250mm
Maximum Flue Length	4,600mm	13,000mm

Standard flue kit

Comprises:

1 x Flue Turret Elbow 600mm (100mm dia) of flue duct 1,030mm (125mm dia) of flue duct including terminal (as measured from centre of flue outlet)	Part No. 7 719 002 345 (100mm dia) Part No. 7 719 002 497 (100mm dia) Part No. 7 719 002 350 (125mm dia)

	Worcester Bosch Part No.	
	100mm	125mm
Extension Flue Kit 1,000mm long	7 719 002 349	7 719 001 892
90° Elbow	7 719 002 348	7 719 001 891
45° Elbow	7 719 002 347	7 719 001 899
Vertical Adaptor	7 719 002 432	7 719 002 433

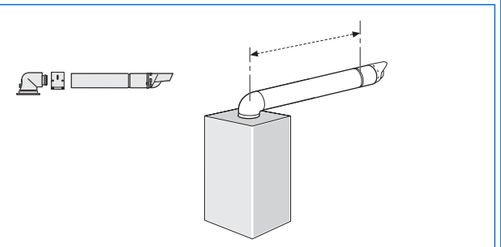
Accessories

The following criteria should be noted when planning the installation.

– The flue system inclines 2½" (44mm per metre) from the appliance, to prevent condensation from dripping from the flue terminal.*

– Because the appliance operates at high efficiency a white plume of condensation will be emitted from the terminal. Care must be taken when selecting the flue terminal position.

Option 1
STANDARD HORIZONTAL FLUE ASSEMBLY

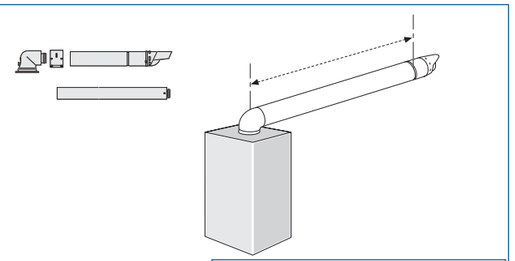


Maximum total straight flue length	100mm	125mm
25 & 30Si	725mm	1,030mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 345/497
125mm	Standard Flue Kit	1	7 719 002 350

Option 2
EXTENSION FLUE HORIZONTAL



Maximum total straight flue length	100mm	125mm
25 & 30Si	4,600mm	13,000mm

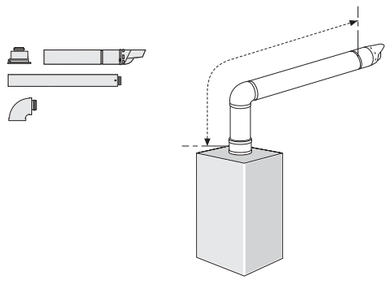
Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 345/497
100mm	Extension Flue Kit	up to 4	7 719 002 349
125mm	Standard Flue Kit	1	7 719 002 350
125mm	Extension Flue Kit	up to 13	7 719 001 892

*The 100mm flue system exhaust pipe inclines 2 degrees within the 100mm air duct.

Option 3

EXTENSION FLUE HORIZONTAL AND UPWARDS



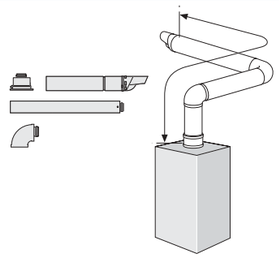
Maximum total straight flue length	100mm	125mm
25 & 30Si	4,600mm	13,000mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 345/497
100mm	Extension Flue Kit	up to 4	7 719 002 349
100mm	90° Elbow	1	7 719 002 348
100mm	Vertical Adaptor	1	7 719 002 432
125mm	Standard Flue Kit	1	7 719 002 350
125mm	Extension Flue Kit	up to 13	7 719 001 892
125mm	90° Elbow	1	7 719 001 891
125mm	Vertical Adaptor	1	7 719 002 433

Option 5

EXTENSION FLUE UPWARDS AND HORIZONTAL USING A SECOND 90˚ BEND



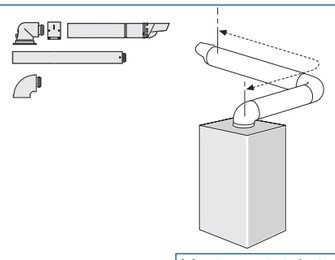
Maximum total straight flue length	100mm	125mm
25 & 30Si	2,600mm	11,000mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 345/497
100mm	Extension Flue Kit	up to 2	7 719 002 349
100mm	90° Elbow	2	7 719 002 348
100mm	Vertical Adaptor	1	7 719 002 432
125mm	Standard Flue Kit	1	7 719 002 350
125mm	Extension Flue Kit	up to 11	7 719 001 892
125mm	90° Elbow	2	7 719 001 891
125mm	Vertical Adaptor	1	7 719 002 433

Option 4

EXTENSION FLUE HORIZONTAL USING A SECOND 90˚ BEND



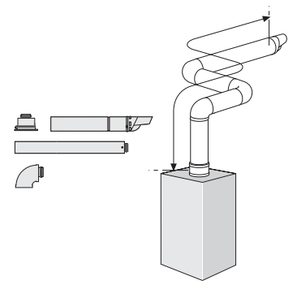
Maximum total straight flue length	100mm	125mm
25 & 30Si	2,600mm	11,000mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 345/497
100mm	Extension Flue Kit	up to 2	7 719 002 349
100mm	90˚ Elbow	1	7 719 002 438
125mm	Standard Flue Kit	1	7 719 002 350
125mm	Extension Flue Kit	up to 11	7 719 001 892
125mm	90˚ Elbow	1	7 719 001 891

Option 6

EXTENSION FLUE UPWARDS AND HORIZONTAL USING A THIRD 90˚ BEND



Maximum total straight flue length	100mm	125mm
25 & 30Si	N/A	9,000mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
125mm	Standard Flue Kit	1	7 719 002 350
125mm	Extension Flue Kit	up to 9	7 719 001 892
125mm	90˚ Elbow	3	7 719 001 891
125mm	Vertical Adaptor	1	7 719 002 433

Greenstar Si combi boiler series vertical fluing options

The Greenstar Si series have the choice of 2 differently sized vertical RSF flue systems, 100mm and 125mm. Both systems have different maximum lengths. Options 1 to 3 detail the permissible lengths.

Vertical RSF Flue

Flue Diameter	**100mm**	**125mm**
Flue Terminal Assembly Diameter	135mm	135mm
Maximum Flue Length (inc terminal)	6,400mm All models	15,000mm
Flue Terminal Assembly Length	1,140mm	1,365mm

Vertical balanced flue kit

Comprises:
1 x Flue Terminal Assembly
1 x Weather Sealing Collar
1 x Fire Stop Spacer
1 x Vertical Adaptor

} Part No. 7 719 002 430 (100mm dia)
Part No. 7 719 002 431 (125mm dia)

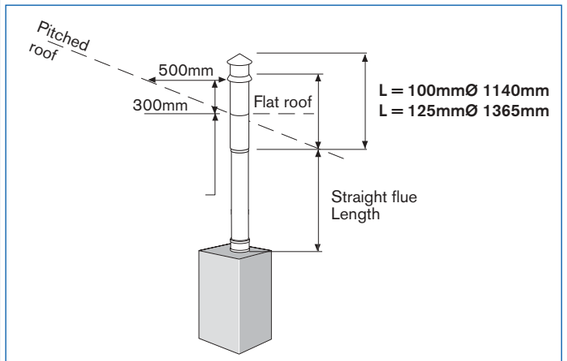
Accessories

	Worcester Bosch Part No.	
	100mm	**125mm**
Extension Flue Kit 1,000mm long	7 719 002 349	7 719 001 892
90° Elbow	7 719 002 348	7 719 001 891
45° Elbow	7 719 002 347	7 719 001 899

Note: The roof flashing is not supplied by Worcester Bosch.

Option 1

VERTICAL BALANCED FLUE SYSTEM MAXIMUM HEIGHT

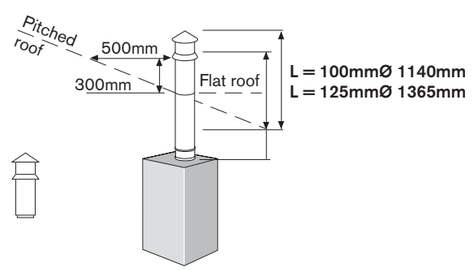


Maximum total straight flue length (Exc. Terminal)	100mm	125mm
25 & 30Si	6,400mm	15,000mm

Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Vertical Flue Kit	1	7 719 002 430
100mm	Flue Extension	up to 6	7 719 002 349
125mm	Vertical Flue Kit	1	7 719 002 431
125mm	Vertical Adaptor	up to 15	7 719 001 892

MINIMUM HEIGHT

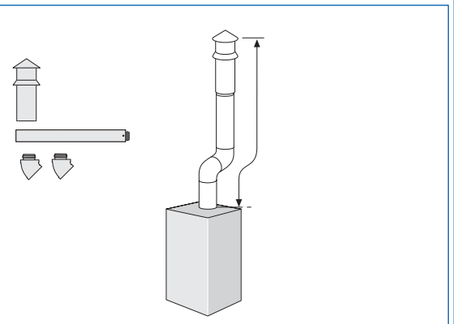


Flue Components Required
25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Standard Flue Kit	1	7 719 002 430
125mm	Standard Flue Kit	1	7 719 002 431

Option 2

VERTICAL BALANCED FLUE SYSTEM WITH TWO 45° BENDS



Maximum total straight flue length	100mm	125mm
25 & 30Si	4,400mm	13,000mm

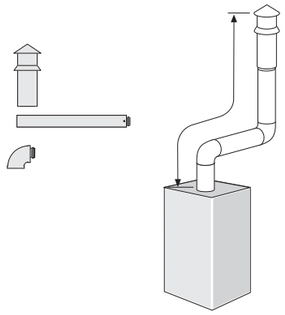
Flue Components Required

25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Vertical Flue Kit	1	7 719 002 430
100mm	Extension Flue Kit	4	7 719 002 349
100mm	45° Elbow (pack of 2)	2	7 719 002 347
125mm	Vertical Flue Kit	1	7 719 002 431
125mm	Extension Flue Kit	13	7 719 001 892
125mm	45° Elbow (pack of 2)	2	7 719 001 899

Option 3

VERTICAL BALANCED FLUE SYSTEM WITH TWO 90° BENDS



Maximum total straight flue length	100mm	125mm
25 & 30Si	2,400mm	11,000mm

Flue Components Required

25 & 30Si Models

Flue Diameter	*Description*	*Quantity*	*Worcester Bosch Part No.*
100mm	Vertical Flue Kit	1	7 719 002 430
100mm	Extension Flue Kit	2	7 719 002 349
100mm	90° Elbow	2	7 719 002 347
125mm	Vertical Flue Kit	1	7 719 002 431
125mm	Extension Flue Kit	11	7 719 001 892
125mm	90° Elbow	2	7 719 001 899

Installation requirements

Installation of the Greenstar Si Series must be in accordance with the relevant requirements of the Gas Safety (Installation Use) Regulations (as amended), current IEE Wiring Regulations, local Building Regulations, Building Standards (Scotland) (Consolidation) regulations and bylaws of the local Water company and Health and Safety Document No. 635 (Electricity at Work Regulations 1989). It should be in accordance with the relevant recommendations of the following British Standards:

BS 6798; BS 5449; BS 5546:1; BS 5440:1; BS 5440:2; BS 6891.

Gas Safety (Installation and Use) Regulations. All gas appliances must be installed by a Corgi registered person in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

The manufacturers notes must not be taken in any way as overriding statutory regulations.

Sealed primary systems

Worcester Bosch Greenstar Si combi boilers are supplied complete with all the necessary components to form a sealed primary system. Included are a pre-plumbed expansion vessel, a pressure relief valve (set at 3bar), an automatic air vent and a pressure gauge.

With an initial system pressure of 0.5bar a system capacity of approximately 83 litres can be accommodated. Refer to BS 7074:Part 1 for more information. The charge pressure can be increased by with a decrease in system volume.

It is important with an Aluminium Heat Exchanger that the pH level of the water does not exceed 8. Levels in excess of this could be detrimental to the Heat Exchanger.

The use of a suitable inhibitor will provide a resistance to this. Contact Betz Dearborn (Tel: 0151 4209563) or Fernox (Tel: 01799 521133) for further details.

System filling and make-up

To comply with the Water Authority requirements, the system should be filled via a temporary hose connection to the mains cold water supply, with a double check valve assembly and test point fitted to the mains water side of a temporary circuit. Alternatively the plug in filling loop option (part number 7 716 192 281, see page 20 for photograph), simply connects between the cold main connection and the heating return circuit on the wall mounting jig.

Valves and joints

It is very important that all valves and joints are able to sustain a working pressure of up to 3bar (45psi). Particular care should be exercised when fitting radiator valves and only those of high quality to BS 2767:10 should be used. All other valves and fittings should comply with BS 1010.

Loss of water pressure from a sealed system will require continuous recharging with fresh water and consequential introduction of air. Air is highly corrosive and will considerably reduce life expectancy of radiators, pumps etc.

Plastic pipework

The use of plastic pipework is acceptable. However, some plastics are permeable to oxygen and must be avoided. Only pipework with a polymeric barrier should be used. Please note that the first 600mm of pipework connected to the boiler must be of copper or steel.

Natural gas supply

The appliances when on a hot water or full output demand will require up to 3.24m^3/hr of gas (depending on the model). The gas meter and supply pipes must be capable of supplying this quantity of gas in addition to the demand from any other appliance being served. It is important that a gas supply pipe of at least 22mm diameter is used. Under no circumstances should the size of the gas supply pipe be less than that of the appliance inlet connection. The meter outlet governor should be capable of ensuring a dynamic pressure of 20mbar (8in wg) at the appliance. Particular consideration should be given to the resistance to gas flow created by elbows, bends etc. Pipework should be sized to overcome this resistance, details of this are given in the table below.

	Total length of Gas Supply Pipe (metres)			*Pipe Diameter (mm)*
	3	6	9	
Gas Discharge Rate m^3/h	2.9	–	–	15
	8.7	5.8	4.6	22
	18.0	12.0	9.4	28

Approximate Additional Length to be Allowed (Natural gas)

Elbows or Tees		*90° Bends*	
Metres	*Feet*	*Metres*	*Feet*
0.5	2	0.3	1

Propane gas supply

The Greenstar Si Series is available in a propane gas version. The appliance when on a hot water or full output demand will require up to 2.38 kg/h of gas (depending on the model). The gas tank or bottles must be capable of supplying this quantity of gas at a nominal pressure of 37mbar (14.8in wg) at the appliance. The table below shows the propane gas discharge through varying lengths of pipe and the resistance to flow created by elbows, bends etc. Pipework should be sized to overcome this resistance.

	Total length of Gas Supply Pipe (metres)			*Pipe Diameter (mm)*
	3	6	9	
Gas Discharge Rate m^3/h				
1.5	1.01	–	15
8.0	5.2	4.2	22
15.9	8.9	8.3	28

Approximate Additional Length to be Allowed (LPG)

Elbows or Tees		*90° Bends*	
Metres	*Feet*	*Metres*	*Feet*
0.6	2	0.3	1

Electricity supply

A 3amp fused three pin plug and unswitched shuttered socket outlet (both complying with BS 1362) or preferably a double pole isolator with a contact separation of 3mm in all poles supplying the appliance should be used.

The appliance electrical circuits are also protected by an internal 2amp fuse. The appliance must be earthed.

Mains cold water supply

Water Authority requirement

A direct mains cold water connection is permitted by Water Authorities. However, it is recommended that reference be made to local requirements. In the event of difficulty contact Worcester Bosch Technical Department.

Pipe sizing

Unless the mains pressure is low, a standard 15mm diameter service pipe is normally suitable. A 15mm hot water distribution pipe to the first branch is recommended thereafter 15mm and/or 10mm to all draw off points.

Cold water connection

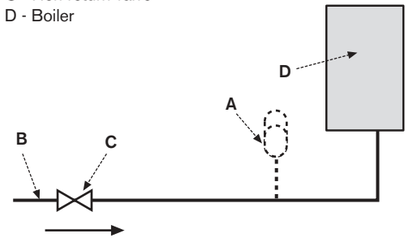
Connection should be made as shown in the pipework detail and the appliance installed generally in accordance with the layout shown on page 10.

Wherever possible the cold supply to the appliance should be the first connection off the mains supply, in order to minimise hot water flow reduction when cold water services are operated. The final 600mm of piping to the appliance should be of copper only.

Cold water pressure

To achieve the stipulated flow rate a working cold water mains pressure of 1.3bar is required. The appliance will operate at a minimum working pressure of only 0.2bar (3psi) however a reduced hot water flow rate should be expected. Where back-flow prevention devices, including water meters, are fitted the expansion of hot water into the cold water main can be prevented. This can result in a pressure build-up that may cause damage to the boiler and household devices such as showers, washing machines etc. In these cases we recommend that a mini-expansion vessel (Part No. 7 716 192 105) be fitted adjacent to the boiler in the cold water main.

MAINS WATER EXPANSION VESSEL:
A - Mini expansion vessel, Part No. 7 716 192 105
B - Mains water inlet pipe
C - Non-return valve
D - Boiler



Hot water supply

A domestic hot water flow regulator, set to give an optimum flow rate of 9.8 or 11.4lts/min ±15% (dependent on model) is fitted to the cold supply of the hot water heat exchanger.

As with all mains fed systems, the flow rate of water obtainable from individual taps will vary in relation to the number of taps operating simultaneously, and will depend upon the cold mains supply available to the property.

Therefore, in order to avoid excessive starvation of flow to individual taps, flow balancing may be required by the use of proprietary constant volume flow regulators or Ball-o-Fix valves.

Hot water systems

Taps and valves

Hot and cold taps and mixing valves used with the Greenstar Si Series appliance must be suitable for operating at a mains pressure and temperatures of 65°C (150°F).

Showers

When a loose head shower with a flexible hose is used over a bath or shower tray, the hose must be fixed so that the head cannot fall closer than 25mm (1in) above the top edge of the spill over level of the relevant bath or shower tray. Alternatively, the feed pipes to the shower should incorporate a double check valve assembly or a check valve and vacuum breaker.

With fixed head showers no provision is necessary.

The use of a thermostatically controlled shower will give added comfort and safeguard against high hot water temperatures. Alternatively, a pressure balancing shower valve specifically designed for constant temperature water heaters would be suitable.

Bidet

The supply of hot and cold water mains direct to a bidet is permitted provided that the bidet is of the overrim water feed type. The outlet(s) should be shrouded and not to have any temporary hand held spray attached. No other anti-syphonage arrangements are necessary.

Use in hard water areas

As the maximum temperature of the domestic hot water heat exchanger is limited by the electronic control circuit, there is normally no need for water treatment to prevent scale accumulation.

In areas where exceptional water conditions prevail, consideration may need to be given to the fitting of a device capable of preventing scale. In such circumstances the advice of the local water authority should be sought.

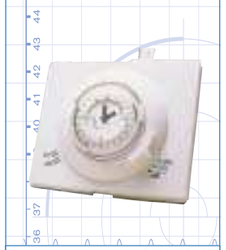
Warranty

Worcester Bosch Greenstar Si appliances are offered with a full 2 year guarantee* on parts and labour. Ongoing service may be arranged through the Worcester Bosch Customer Service Department.

*Subject to conditions.

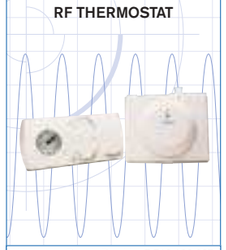
The Greenstar Si series accessories

MT10 MECHANICAL TIMER



Worcester Bosch Part No. 7 716 192 036

MT10RF MECHANICAL RF THERMOSTAT

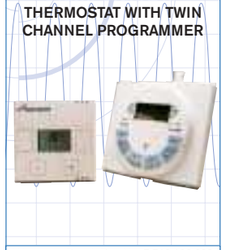


Worcester Bosch Part No. 7 716 192 037

DT20 TWIN CHANNEL DIGITAL PROGRAMMER

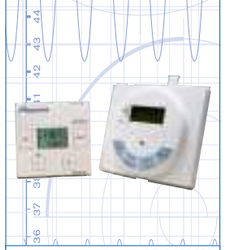
Worcester Bosch Part No. 7 716 192 038

DT20RF DIGITAL RF THERMOSTAT WITH TWIN CHANNEL PROGRAMMER



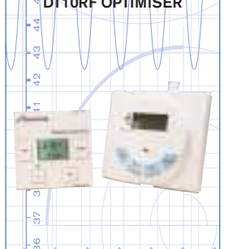
Worcester Bosch Part No. 7 716 192 028

DT10RF DIGISTAT



Worcester Bosch Part No. 7 716 192 039

DT10RF OPTIMISER

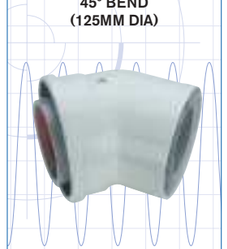


Worcester Bosch Part No. 7 716 192 040

45° BEND (100MM DIA)

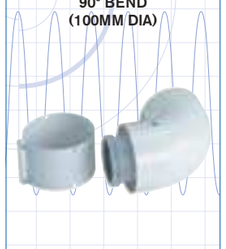
Worcester Bosch Part No. 7 719 002 347

45° BEND (125MM DIA)



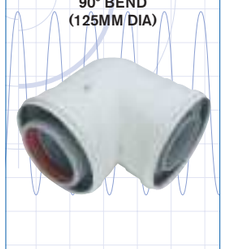
Worcester Bosch Part No. 7 719 001 899

90° BEND (100MM DIA)



Worcester Bosch Part No. 7 719 002 348

90° BEND (125MM DIA)



Worcester Bosch Part No. 7 719 001 891

1M EXTENSION (100MM DIA)

Worcester Bosch Part No. 7 719 002 349

1M EXTENSION (125MM DIA)

Worcester Bosch Part No. 7 719 001 892

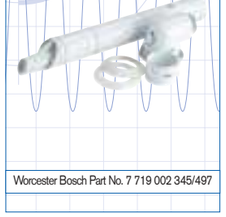
VERTICAL BF KIT (100MM DIA)

Worcester Bosch Part No. 7 719 002 430

VERTICAL BF KIT (125MM DIA)

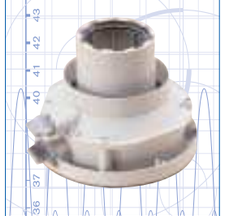
Worcester Bosch Part No. 7 719 002 431

HORIZONTAL FLUE KIT (100MM DIA)



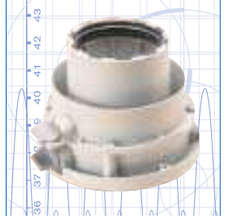
Worcester Bosch Part No. 7 719 002 345/497

VERTICAL FLUE ADAPTER (100MM DIA)



Worcester Bosch Part No. 7 719 002 432

VERTICAL FLUE ADAPTER (125MM DIA)

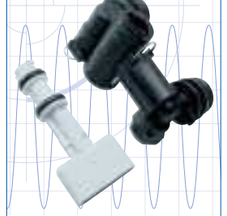


Worcester Bosch Part No. 7 719 002 433

HORIZONTAL FLUE KIT (125MM DIA)

Worcester Bosch Part No. 7 719 002 350

FILLING LINK



Worcester Bosch Part No. 7 716 192 281

A complete after-sales service – Whenever you need it

As part of the worldwide Bosch Group, Worcester is duty bound to maintain the highest possible standards of after-sales care.

In addition to the no-nonsense parts and labour warranty applicable to all Worcester Bosch boilers, you and your customers have the assurance that every Worcester Bosch boiler is manufactured to the appropriate British and European Standards.

What's more, at the company's multi-million pound headquarters, you have access to Worcester Bosch's comprehensive after-sales service and technical advice unit which provides technical advice on all aspects of the company's extensive product range.

This includes help in selecting a boiler or system to suit a particular application, along with full guidance on installation. So, wherever you are, Worcester Bosch's support team is behind you all the way.

And the same goes for Spares. Replacement parts for all Worcester Bosch boilers are readily available from stock, on a next day delivery basis, enabling you to deal promptly and efficiently with your customers.

All the technical advice you need

Post-sales technical team.

The Worcester Bosch Technical Helpline is a dedicated phone line – dedicated to providing the best service from any manufacturer in the industry. Our team of technical experts provide the answers to queries of a technical nature on any product in the Worcester Bosch range, from application to installation to performance.

Pre-sales technical team.

The very best training programmes from Worcester Bosch

Worcester Bosch has always placed great emphasis on support and training for installers and service engineers. Today this need is greater than ever: one in every two boilers now purchased in the UK is a combi boiler and, month by month, an increasing number of condensing boilers are being installed. The differences between a combi, conventional and condensing boiler are substantial, and the technology of each continues to advance at a rapid pace.

To ensure the highest levels of competence and expertise in the installation of all Worcester Bosch boilers, the company runs intensive training courses for installers, commissioning engineers and engineers involved with servicing and fault finding.

Courses available

The Worcester Bosch Training Department has on offer a number of courses suitable for the installer and commissioning engineers, and a more in-depth course for the servicing and fault finding engineers.

State-of-the-art Worcester Bosch Training Academy

A recent addition to the excellent training facilities at the company's Worcester headquarters, this unique and advanced academy is the only one in the UK dedicated entirely to successful installation and commissioning of gas-fired and oil-fired boilers. The set-up is unique too: 4 custom-built workshops guide you step by step through a first-class troubleshooting course.

Regional Worcester Bosch Training Centres

In addition to the Training Academy, we have a further dedicated oil training centre at the headquarters site, together with another brand new, purpose-built gas and oil training centre a short drive from the factory. These are complimented by two regional centres which are located at Clay Cross in Derbyshire and Rochester in Kent. Three locations in Scotland – Dunfermline, Inverness and Perth – are also available, as well as a centre in Bangor, Northern Ireland.

These centres help put more businesses within easier travelling distance of the courses they wish to attend. Each is run by specialist trainers and is superbly equipped to deliver a proven and unrivalled combination of classroom theory and practical hands-on experience.

New Product Advance Training

Exclusive to Business Initiative members, these invaluable courses give you an introduction and insight into new Worcester Bosch products as soon as they are released on to the market.

College Links

A number of the country's leading proactive technical colleges are now equipped with Worcester Bosch products and offer excellent practical tuition on a more local level.

Distance Learning

A joint initiative from key names in the heating and plumbing industry, this offers a choice of low-cost home study elements compiled by experts. As a Business Initiative member you will receive a free Distance Learning CD which is packed with information.

Get on course for a more profitable future now

Call now for more information

01905 752526

Worcester Bosch Training Courses

CDi XTRA and Greenstar HE Series gas-fired condensing combi boilers

Models covered	26CDi XTRA and Greenstar HE Series
Duration	1 day

CDi gas-fired combi boiler series

Models covered	24CDi, 28CDi, and 35CDi
Duration	1 day

i Junior and Si II gas-fired combi boilers

Models covered	24i Junior, 28i Junior, 24Si II and 28Si II
Duration	1 day

SBi system boilers and CBi cast-iron gas-fired boilers

Models covered	15SBi, 24SBi, 9-14CBi, 14-19CBi and 19-24CBi
Duration	1 day

Danesmoor, Heatslave and Greenstar HE oil-fired boilers

Models covered	Danesmoor, Heatslave and Greenstar
Duration	1 day

OFTEC Training

OFTEC 101

Covering	Domestic/Light Commercial Pressure Jet Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment)

OFTEC 105

Covering	Domestic/Light Commercial Pressure Jet Boiler installation
Duration	1 day assessment

OFTEC 101 & 105

Covering	Domestic/Light Commercial Pressure Jet Installation, Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment comprising 2 theory and 1 practical)

OFTEC 600A

Covering	Oil Tank Installation and Associated Controls
Duration	1 day assessment course

Benchmark

Covering	Benchmark code requirements
Duration	1 day

City & Guilds Level 3 Certificate in Energy Efficiency for Domestic Heating (Course Number 6084)

Covering	Key elements of energy-efficient heating and hot water systems and products, compliance with the latest Building Regulations, how condensing boilers work and how they differ to non condensing products.
Duration	1 day

New Training Academy

Covering	Installation and Commissioning Flues and Air Supply Gas and Oil Supply System Design and Flushing Electrical Wiring and Control
Duration	2 day